Scenarios to prioritize observing activities on the North Slope, AK
in the context of resource development, climate change and socio-economic uncertainties


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## Abstract

The North Slope of Alaska is experiencing rapid changes in response to interacting climate and socioeconomic drivers. The North Slope Science Initiative (NSSI) is using scenarios as a tool to identify plausible, spatially explicit future states of resource extraction activities on the North Slope and adjacent seas through the year 2040. The objective of the scenarios process is to strategically assess research and monitoring needs on the North Slope. The participatory scenarios process involved stakeholder input (including Federal, State, local, academic, industry and non-profit representatives) to identify key drivers of change related to resource extraction activities on the North Slope. While climate change was identified as a key driver in the biophysical system, economic drivers related to oil and gas development were also important. Expert-reviewed informational materials were developed to help stakeholders obtain baseline knowledge and stimulate discussions about interactions between drivers, knowledge gaps and uncertainties. Map-based scenario products will allow mission-oriented agencies to jointly explore where to prioritize research investments and address risk in a complex, changing environment. Scenarios consider multidecadal timescales. However, tracking of indicator variables derived from scenarios can lead to important insights about the trajectory of the North Slope social-environmental system and inform management decisions to reduce risk on much shorter timescales. The inclusion of stakeholders helps provide a broad spectrum of expert viewpoints necessary for considering the range of plausible scenarios.

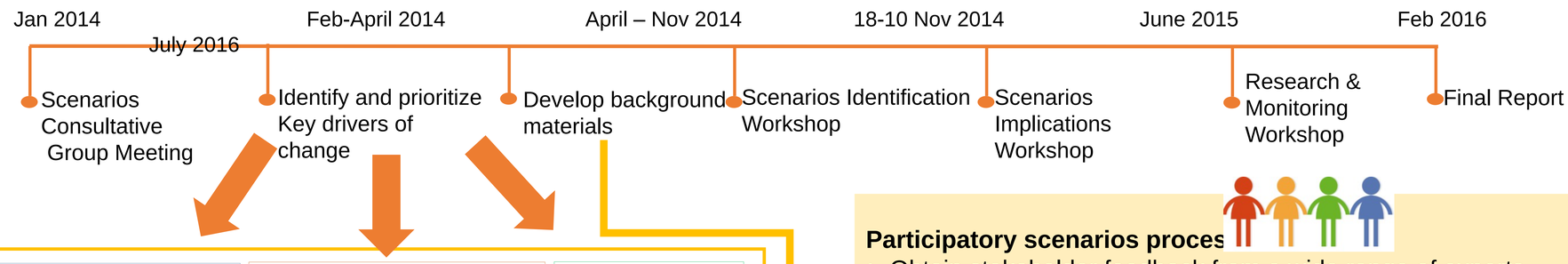

## Background

- The North Slope Science Initiative Scenarios project builds on previous work by the NSSI Science Technical Advisory Panel and Senior Staff Committee Emerging Issues Papers and Connectivity paper (Streever et al. 2011) identifying science needs on the North Slope.
- The Focal Question was identified by the NSSI Oversight Group. The main goal of the scenarios is to help NSSI member agencies prioritize and identify future research and monitoring needs.
- The NSSI, University of Alaska Fairbanks (UAF) and GeoAdaptive, LLC are conducting a participatory scenarios process that includes broad stakeholder feedback in identifying resource development scenarios.
- UAF is interested in using the scenarios framework to identify key variables to monitor in the Arctic.

## Focal Question

What is the future of energy development, resource extraction and supporting activities on the North Slope and adjacent seas through 2040?

## Timeline

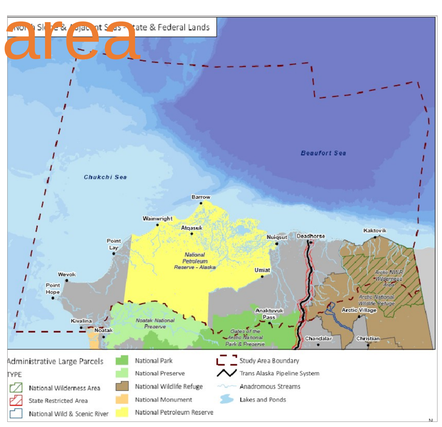


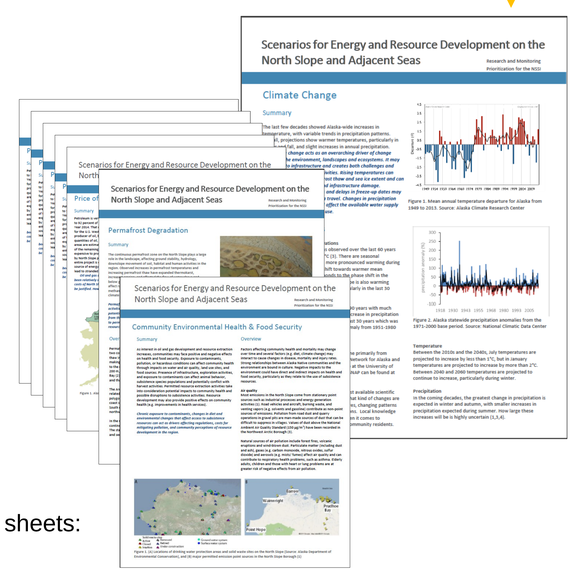

- Local/ State Economy
- Price of Oil & Gas & Demand
- Price of other commodities
- Endangered Species
- State & Federal Regulations

- Community decision making
- Health & Food Security
- Global political stability
- Environmental disasters (human-caused)

- Climate change
- Sea ice extent
- Permafrost
- Erosion

## Study area




Access fact sheets:

https://accap.uaf.edu/?q=Scenario_planning_NSSI

**Participatory scenarios proces**

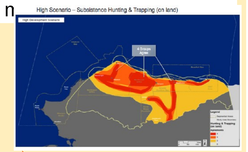
- Obtain stakeholder feedback from a wide range of experts
  - 44 institutions represented in workshops
- High, Medium and Low scenarios identified
- Expert insight on key drivers, uncertainties, scenario implications and ongoing/ future research needed

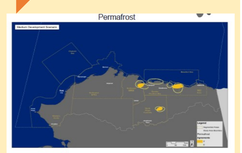



Table 1. Critical scenario implications identified in small groups (X), and prioritized subcategories from individual votes (XX)

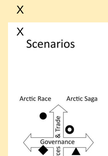
| Implication subcategory* | High dev | Medium dev | Low dev |
|---|---|---|---|
| Marine oil spills | XX | XX | |
| Marine mammal harvests | XX | X | X |
| Hunting & trapping on land | XX | X | XX |
| Community Culture | XX | XX | XX |
| ESA listed species | X | XX | X |
| Health and safety | X | X | XX |
| Oil/ gas revenue & employment | X | X | |
| Permafrost | X | XX | |
| Sea ice | X | X | |
| Erosion | X | X | XX |
| State and local tax revenue | X | XX | XX |
| Hydrology | XX | | |
| Decommissioning & reclamation of infrastructure | | | XX |
| Fishing | | | X |
| Migratory and other birds | X | | X |

Scenario Implications n




Current analysis: Priority research and monitoring efforts




**Learn more & follow our progre**

http://www.northslope.org/scenarios/


**References**

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